

REMARKS

Claims 9, 12, and 15-20 have been cancelled and new claims 21-28 have been added; thus, claims 1-8, 10-11, 13-14, and 21-28 are all the claims pending in the application. Claims 1-14 stand rejected on prior art grounds. Applicants respectfully traverse the rejections based on the following discussion.

I. The Prior Art Rejections

Claims 1-14 stand rejected under 35 U.S.C. §102(b) as being anticipated by Cantell, et al. (U.S. Patent No. 6,184,132), hereinafter referred to as Cantell. Claims 1, 3-8 and 12-14 stand rejected under 35 U.S.C. §102(b) as being anticipated by Hirose, et al. (U.S. Patent No. 5,990,005), hereinafter referred to as Hirose. Applicants respectfully traverse these rejections based on the following discussion.

The claimed invention provides a system for forming a silicide on a silicon material comprising a vacuum chamber, a metal formation tool, and a heating tool. In the rejection, the Office Action argues that Cantell discloses a heater chuck for holding a substrate to be treated where the chuck is heated resistively. However, the pedestal of Cantell is not heated, rather a chamber 30 is used as the heating tool. In regards to Hirose, a heater 6 is provided on a top or main surface of a silicon substrate; thus, the heater 6 is not a chuck positioned below the substrate for holding the substrate. In addition, Applicants submit that Cantell and Hirose only disclose two vacuum chambers; thus, they fail to teach a third vacuum chamber adapted to maintain a vacuum environment while transporting the silicon material from a first vacuum chamber to a

second vacuum chamber. Moreover, Cantell and Hirose fail to teach that the first and second vacuum chambers are outside of a third vacuum chamber. Therefore, as explained in greater detail below, Applicants respectfully submit that the prior art of record does not teach the claimed invention.

The Office Action asserts that Cantell discloses a heater chuck (16, 14) for holding a substrate to be treated where the chuck is heated resistively (Office Action, p. 2, para. 3, 1st sentence). However, the Office Action fails to cite any support for this contention. Column 4, lines 63-67 of Cantell provides that the device includes a pedestal 14 comprising a shaft 16. Nevertheless, contrary to the position taken in the Office Action, nothing within Cantell mentions that either the pedestal 14 or the shaft 16 is heated.

Rather, Cantell teaches that the chamber 30, and not the pedestal 14 and/or the shaft 16, is the heating tool used during a cobalt deposition process (col. 5, lines 54-55). Cantell further discloses that the substrate may be removed from device 50 and subjected to a heat treatment which can be performed in an external heating device (col. 5, lines 60-62).

Furthermore, Applicants submit that Hirose does not disclose a heating tool comprising a heated chuck. Rather, as provided in column 14, lines 40-47 of Hirose, a heater 6 is provided on the top surface or a main surface of the silicon substrate 1. The heater 6 may comprise either a normal heater which generates heat or a halogen lamp which projects a light onto the substrate 1. It is possible that the halogen lamp is provided outside the chamber 4 so as to project a light onto the substrate 1 from the exterior of the

chamber 4. Moreover, as illustrated in FIG. 1, the heater 6 is not a chuck within the reflow chamber 4 that is adapted to hold the silicon substrate 1.

Therefore, it is Applicants' position that neither Cantell nor Hirose teach the claimed feature of "a heating tool ... compris[ing] a heated chuck" as defined by independent claims 1, 8, and 23. The pedestal of Cantell is not heated, rather the chamber 30 is used as the heating tool. Further, the heater 6 is provided on the top surface or a main surface of the silicon substrate in Hirose; thus, the heater 6 is not a chuck positioned below the substrate for holding the substrate.

In addition, Applicants submit that neither Cantell nor Hirose teach a system comprising three vacuum chambers. Conversely, referring to FIG. 2 of Applicants' disclosure, and as described in paragraph 0021, the vacuum chambers can comprise a first vacuum chamber 202 containing the metal formation tool 206, a second vacuum chamber 204 containing the heating tool 208, and a third vacuum chamber 203 adapted to maintain the vacuum environment while transporting the silicon material 210 from the first vacuum tool to the second vacuum tool.

Referring to FIG. 1 of Cantell, there is disclosed a cleaning chamber 10 and a cobalt deposition chamber 30. However, nothing within Cantell discloses a third vacuum chamber. In regards to Hirose, FIG. 1 illustrates a sputter chamber 2 and a reflow chamber 4. However, nothing within Cantell discloses a third vacuum chamber.

Therefore, Applicants submit that Cantell and Hirose clearly fail to disclose a third vacuum chamber. Thus, it is Applicants' position that neither Cantell nor Hirose

teach the claimed feature of “a first vacuum chamber, a second vacuum chamber, and a third vacuum chamber”, as defined by independent claim 23.

Furthermore, because Cantell and Hirose only disclose two vacuum chambers, Cantell and Hirose fail to teach the claimed feature of a “third vacuum chamber adapted to maintain said vacuum environment while transporting said silicon material from said first vacuum chamber to said second vacuum chamber”, as defined by dependent claims 4, 22, and 28; or, the claimed feature “wherein said first vacuum chamber and said second vacuum chamber are outside of said third vacuum chamber”, as defined by dependent claims 21, 22, and 28.

Therefore, it is Applicants' position that neither Cantell nor Hirose disclose many features defined by independent claims 1, 8, and 23 and that such claims are patentable over the prior art of record. Further, it is Applicants' position that dependent claims 2-7, 10-11, 13-14, 21-22, and 24-28 are similarly patentable, not only because of their dependency from a patentable independent claims, but also because of the additional features of the invention they defined. In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections.

II. Formal Matters and Conclusion

With respect to the rejections to the claims, the claims have been amended, above, to overcome these rejections. In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections to the claims.

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In view of the foregoing, Applicants submit that claims 1-8, 10-11, 13-14, and 21-28, all the claims presently pending in the application, are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary. Please charge any deficiencies and credit any overpayments to Attorney's Deposit Account Number 09-0458.

Respectfully submitted,

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